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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,758	07/30/2004	Ming Kuang	81102748/FMC1779PUS	4757
28395	7590	08/16/2006	EXAMINER	
BROOKS KUSHMAN P.C./FGTL 1000 TOWN CENTER 22ND FLOOR SOUTHFIELD, MI 48075-1238			LUU, MATTHEW	
			ART UNIT	PAPER NUMBER
			3663	

DATE MAILED: 08/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/710,758	Applicant(s) KUANG ET AL.	
	Examiner LUU MATTHEW	Art Unit 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 2-4,6-10 and 12 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,5 and 11 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/30/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 5 and 11 are rejected under 35 U.S.C. 101 because
the claimed invention is directed to non-statutory subject matter.

Regarding claim 1, the steps for calculating angular acceleration of the motor, angular acceleration of the engine, moments of inertial of the motor and generator, static gearing output torque, motor torque, and estimating total wheel torque are merely calculations or mathematical algorithms, i.e., abstract ideas. Furthermore, claim 1 does not provide a useful, concrete or tangible result.

Regarding claims 5 and 11, the "mathematical equation" is not entitled to patent protection standing alone since it represents nothing more than an abstract idea.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Art Unit: 3663

Claims 1, 5 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 1, lines 4-6, it is unclear what exactly is "gearing that defines plural torque flow paths from the engine and the motor to a torque output shaft".

Claim 1, line 14, is the "inertia" the same as the "moments of inertia of the motor and the generator" recited on lines 9-10?

Claim 1, line 16, it is unclear what exactly is the "torque ratio from the motor to the vehicle wheels".

Regarding claim 5, line 9, it is unclear what exactly is the "couple moment of inertia of generator and the gear element to which it is connected".

Regarding claim 5, line 12, it is unclear what exactly is the "sum of the lumped motor and gearing inertia and the lumped generator inertia reflected at the motor".

Regarding claim 11, line 2, it is unclear what exactly is the "static gearing output torque".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kowatari et al (US 2004/0094342) in view of Fujikawa (US 2003/0062206).

Regarding claim 1, Kowatari discloses (Figs. 1 and 4) a method for determining driving wheel torque for a vehicle having a hybrid electric powertrain, the powertrain comprising an engine (11), an electric motor (13), a generator (15) and gearing (17 and 18) that defines plural torque flow paths from the engine (11) and the motor (13) to a torque output shaft, the method comprising:

- calculating angular acceleration of the motor (Sections 55-57);
- calculating angular acceleration of the engine (Sections 46 and 51);
- calculating static gearing output torque and motor torque (Sections 46-48 and 57); and

- estimating total wheel torque (Fig. 4, steps 42 and 45) as a function of operating variables including moments of inertia of the motor (Sections 35 and 36), angular acceleration of the engine (Section 51), and the motor torque and torque ratio from the motor to the vehicle wheels (Sections 48 and 54-57).

Kowatari fails to disclose a battery and the step of calculating moments of inertia of both motor and generator.

However, Fujikawa discloses (Fig. 1) a parallel hybrid vehicle comprises a battery (6) and the step of calculating moments of inertia of both motor and generator (Sections 73 and 74).

Therefore, it would have been obvious to a person of ordinary skill in the art to use the method calculating moments of inertia of both motor and generator into the method for calculating the wheel torque for a hybrid vehicle of Kowatari to provide a parallel hybrid vehicle, which can obtain a sufficient regenerative power.

Regarding claim 5, It is well known in the art of experimentation that one derives his or her own formula for operating a system. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the equation in the method of estimating the wheel torque, since it is well known in the art to derive a mathematical formula /equation to operate a system.

Regarding claim 11, note the rejection as set forth above with respect to claim 5. Fujikawa further teaches the static gearing output torque is computed in accordance with torque at motor shaft (the torque of propeller shaft); torque ratio from generator to motor shaft and generator torque (motor/generator torque $T_{M/G}$) (Sections 60 and 63).

Response to Applicant's Election Without Traverse

Applicant's election without traverse of Species A (claims 1, 5 and 11), in the reply filed on July 24, 2006 is acknowledged.

Claims 1-4, 6-10 and 12 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species, there being no allowable generic or linking claim.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-Hommi et al (US 2005/0284679) disclose (Figs. 1 and 2) a method for calculating motor torque demand (T_m^*) in a electric vehicle system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUU MATTHEW whose telephone number is (571) 272-7663. The examiner can normally be reached on Flexible Schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JACK KEITH can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

M. Luu

A handwritten signature in black ink, appearing to read 'Matthew Luu', with a large, stylized initial 'M'.

**MATTHEW LUU
PRIMARY EXAMINER**